

Managing Images in Different Cultures: A Cross-National Study of Color Meanings and Preferences

ABSTRACT

Color is an integral part of products, services, packaging, logos, and other collateral and can be an effective means of creating and sustaining brand and corporate images in customers' minds. Through an eight-country study, the authors explore consumers' preferences for different colors and color combinations. The results show cross-cultural patterns of both similarity and dissimilarity in color preferences and color meaning associations. When subjects are asked to match colors for a product logo, some color combinations suggest a consistency in meaning, whereas other combinations suggest colors whose meanings are complementary. The authors discuss implications for managing color to create and sustain brand and corporate images across international markets.

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Firms continually search for ways to enhance the image and power of their brands. When the desired image strategy is determined, marketing programs are developed and implemented that clearly position the brand in customers' minds (Park, Jaworski, and MacInnis 1986). Cultural, economic, social, and other differences make it difficult for firms to identify single brand image strategies that have global appeal. Roth (1995) finds that firms are just as likely to use different image strategies across markets as they are to keep the image strategy the same. Therefore, global firms need to specify a brand image strategy as well as a clearly developed marketing program that creates and maintains the desired image in the customer's mind across cultural borders.

One marketing cue that global managers can use regardless of location is color (Kirmani 1997; Schmitt and Pan 1994). Color is one of the many marketing tools that global managers use to create, maintain, and modify brand images in customers' minds (see Schmitt and Simonson 1997). The significance of color to convey meaning is evident from the existence of the Lanham Act in the United States, which protects product colors as trademarks. However, research has not empirically addressed the extent to which color can be managed to create and sustain brand images. To what extent can global managers strategically use color to communicate desired images and reinforce them to consumers?

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Colors are known to possess emotional and psychological properties (Hevner 1935; Ward 1995). The meanings associated with different colors are important to marketers because the tools used to communicate brand image are mechanisms of meaning transfer (McCracken 1988; Schmitt and Simonson 1997). The research described here is first and foremost exploratory. The goal of the research is to explore cross-nationally the meaning(s) associated with color combinations, as well as with specific colors, and to provide a conceptual framework for further research. If consumers associate specific meaning(s) with individual colors and color combinations, managers can select the colors that best fit their image strategy.

A rose by any other name may still be a rose; but the color of the rose may make a difference. Japanese consumers prefer white, whereas consumers from Hong Kong prefer red (Gunnerod 1991). Cooper (1994) has shown that color ranks among the top three considerations, along with price and quality, in the purchase of an automobile. Color is also an important component of many corporate and brand-building cues, such as logos, packages, and displays (Schmitt and Pan 1994). The effects of culture on the meaning associated with marketing cues (such as color) are critical for international marketing managers. If the meaning associated with a color or combination of colors is different across cultures, marketers may benefit from pursuing a customized strategy with respect to the color associated with the brand, package, and so on. In contrast, when color meanings are similar across markets, a standardized strategy is more viable. Although some studies have explored general color preference (see Grieve 1991; Krishna 1972), few have dealt with differences in consumers' perceptions of colors based on their cultures (Bellizi and Hite 1992; Jacobs et al. 1991).

Wagner, the creator of the Wagner Color Research Institute, contends that colors are associated with certain images (Lane 1991). For example, blue is associated with wealth, trust, and security; gray is associated with strength, exclusivity, and success; and orange denotes cheapness. These associations may explain why banks are more likely to color their logos and collateral using blue or gray rather than orange (Seitel 1993). Wagner put his theory into practice with Wienerschnitzel, a hot dog restaurant with 350 locations in the United States. Wagner advised Wienerschnitzel to add a little orange to the color of its buildings to convey the message that the chain sold inexpensive hot dogs. After the change in color, Wienerschnitzel reported a 7% increase in sales (Lane 1991).

Color used in packaging can be equally important in determining a product's desirability. James Mandle, a color consultant, changed the color of Ty-D-Bol's toilet bowl cleanser

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bottle from light blue and green to stark white letters on a dark background. He believed that the original colors were “too wimpy” (Lane 1991, p. 146) and that the new, bolder colors would connote strength and cleanliness. In an 18-month period following the change of color, sales of Ty-D-Bol jumped 40% (Lane 1991).

Associations and Meanings of Colors

Color influences both human behavior and human physiology. When asked how to lower stress in the workplace, Ward (1995, p. 3) did not suggest another workshop; he simply said, “paint the walls—the right colors in the right place can make an exciting or calming difference.” Wexner (1954, p. 434) notes that “red is more often associated with exciting—stimulating, orange with distressed—disturbed—upset, blue with tender—soothing, purple with dignified—stately, yellow with cheerful—jovial—joyful, and black with powerful—strong—masterful.” Recently, the Xerox Corporation launched an image and repositioning campaign in which the company’s logo and trademark were changed from blue to red. The reason was to change customer perceptions of Xerox from a traditional copier company to a more diversified technology company that offers printers, scanners, faxes, and imaging equipment other than copy machines. Cimbalo, Beck, and Sendziak (1984) test the association of color and emotion with primary (second and third grade) students and college students. For both groups, the ratings of colors significantly varied: Yellow, orange, and blue were designated as happy colors, and red, black, and brown were designated as sad colors.

Culture and Color Preferences

Some studies (Philbrick 1976; Trueman 1979) have assessed the preference of colors across cultural borders. The results have demonstrated that people of different cultures have various preferences for color. Cultural differences in color meanings and associations have also been identified. Adams and Osgood (1973) surveyed high school students in 20 countries, asking them to rate seven colors on 12 semantic differential items. In the tradition of Osgood, Suci, and Tannenbaum (1957), Adams and Osgood report results for the dimensions of evaluation, potency, and activity as defined by the 12 items. Blue was the most highly evaluated color, followed by green and white. The most potent colors were black and red. Red was the most active color, whereas black and grey were the most passive colors. Jacobs and colleagues (1991) asked student subjects from four cultures (Japan, People’s Republic of China [PRC], South Korea, and United States) to state which one of eight colors was most closely associated with 13 words often used to describe consumer products. The results indicate some similarities and some dissimilarities across cultures. All four cultures associate blue with high quality and red with love. Purple is associated with expensive for subjects from Japan, PRC, and South Korea. In contrast, respondents

from the United States associate purple with inexpensive. Black is consistently associated with expensive and powerful across cultures. Although reactions to color are considered highly individualized, universal color preferences are thought to exist. For example, blue is the color most frequently chosen by adults (Grieve 1991). However, exceptions exist. Silver (1988) reports that African American subjects like colors in the red–purple–black range, whereas white subjects prefer blues and greens. Similarly, Wiegiersma and Van der Elst (1988) conducted a cross-cultural study and report that blue is the color chosen most often, except by respondents from Senegal and the Transkei, who prefer red and black. In India, Hindus consider orange the most sacred color, whereas the Ndembo in Zambia do not even consider orange a separate color (Tektronix 1998).

Prior research has assessed color preferences and associations; however, few studies have assessed the meaning of color or the preference for color combinations. It is important for marketers to understand which colors are preferred by people. However, if marketing managers are going to use color to create, maintain, or modify brand images in consumers' minds, they must understand what meanings are associated with different color combinations. Many times, brands and their packaging and collateral are specific combinations of color. Color combinations are considered culturally bound with certain ideologies and traditions (Geboy 1996). The combination of colors selected for products, logos, and so forth may convey meaning as a result of the specific color pairings. For example, black on red signifies happiness to Chinese people, and therefore the color combination is commonly used for wedding invitations. A combination of red over white represents celebration and signifies the life force to the Japanese. Red and white is a combination used for ritual decorations in Melanesia and for representing the Sacred Heart of the Catholic Church in Mexico (Tektronix 1998).

In this research, we explore the preferences and meanings associated with an assortment of colors in eight diverse cultures. Respondents from eight countries evaluated ten colors. Each respondent first rated the colors on scales designed to capture the meanings associated with color. Next, they rated each of the ten colors with respect to how much they liked each color. Last, to assess potential meaning arising from color combinations, subjects selected a color to place in the top half of three separate logos in which the bottom color was blue, red, or green. Blue, red, and green were used because they are often the most popular colors (Ward 1995). The matching of color combinations in the logo tasks enables us to explore the possibility of using certain color combinations to facilitate image building and identity management.

METHOD

Overview

All questionnaires were constructed in the native language of each country. The questionnaires were first translated by a bilingual native of each country and then back-translated into English by a different person who was also bilingual. When asked to rate a color, subjects were shown a swatch of the color in addition to its name for a consistent interpretation across cultures. The questionnaires were created electronically with Lotus Amipro word processing software, and standard color shading options were selected for the swatches. Each color was selected from the color shading option and inserted next to the appropriate section in the questionnaire. All questionnaires were printed on the same color laser printer for consistency in color appearance across questionnaires.

Sample

The sample consisted of undergraduate students from countries in East Asia, Europe, North America, and South America. The countries studied and the sample size for each were Austria (n = 29), Brazil (n = 26), Canada (n = 29), Colombia (n = 48), Hong Kong (n = 19), PRC (n = 31), Taiwan (n = 22), and the United States (n = 49). Countries were selected to represent various regions of the world and thus cultural environments.

Measurement

The colors selected were based on the colors most often cited in previous color research and included black, blue, brown, gold, green, orange, purple, red, white, and yellow. Respondents rated each color on 20 items (associations), using seven-point semantic differential scales. The items were selected from previous research on color associations and preferences. The complete set of anchors used for the 20 scaled items is listed in Table 1. Following the semantic differential questions for each color, subjects were asked to rate how much they liked versus disliked each color on a seven-point scale.

Table 1.
Semantic Differential
Scale Anchors

Hot/cold
Pleasant/unpleasant
Lush/austere
Vibrant/still
Happy/sad
Passive/active
Meaningful/meaningless
Serious/humorous
Violent/gentle
Unique/commonplace
Emotional/rational
Ugly/beautiful
Dull/sharp
Bad/good
Masculine/feminine
Ferocious/peaceful
Usual/unusual
Stale/fresh
Formal/informal
Calming/exciting

The last section of the questionnaire presented subjects with three hypothetical logos. The lower triangles were colored green, red, and blue. Subjects were asked to indicate which color they would select for the top portion of the logo, if it were their decision.

The mean liking ratings for the colors are shown in Table 2. The colors have been arrayed from most to least liked for each country. There were no statistically significant differences with respect to the liking of black, green, red, and white across countries. Preferences for blue, brown, gold, orange, purple, and yellow were statistically significant ($p < .05$) across cultures. To assess similarities in the ranking of colors from most to least preferred, we used Kendall's coefficient of concordance. The coefficient of agreement ranged from a low of .38 for Taiwan compared with PRC and the United States to a high of .78 for the similarity in rankings between Brazil and Colombia. For eight countries, there are 28 coefficients of agreement, of which 22 were statistically significant ($p < .05$). Thus, in three-fourths of the country pairs, there is significant agreement on color preference rankings.

RESULTS

Color Liking

Austria		Brazil		Canada		Colombia	
<i>Color</i>	<i>Mean</i>	<i>Color</i>	<i>Mean</i>	<i>Color</i>	<i>Mean</i>	<i>Color</i>	<i>Mean</i>
Blue	6.59	White	6.34	Black	5.52	Blue	6.23
Green	5.86	Blue	6.12	Blue	5.48	White	5.54
White	5.52	Green	5.35	White	5.41	Green	5.38
Black	5.21	Black	5.23	Red	5.24	Red	5.10
Red	4.34	Red	5.00	Green	5.21	Black	5.02
Orange	4.34	Brown	4.50	Purple	4.03	Purple	3.83
Yellow	3.59	Purple	4.27	Yellow	3.79	Yellow	3.63
Brown	3.97	Yellow	4.31	Orange	3.55	Gold	3.52
Purple	3.24	Gold	3.77	Gold	3.55	Brown	3.21
Gold	3.17	Orange	3.58	Brown	3.03	Orange	2.90

Hong Kong		PRC		Taiwan		United States	
<i>Color</i>	<i>Mean</i>	<i>Color</i>	<i>Mean</i>	<i>Color</i>	<i>Mean</i>	<i>Color</i>	<i>Mean</i>
White	5.84	Blue	5.81	Blue	6.27	Blue	5.90
Blue	5.37	White	5.65	White	6.23	Green	5.63
Black	5.21	Black	5.26	Purple	5.18	Black	5.31
Red	5.21	Red	5.16	Black	4.82	White	5.29
Yellow	5.05	Green	5.13	Green	4.82	Red	5.14
Purple	5.00	Gold	4.55	Yellow	4.64	Gold	3.94
Gold	4.84	Yellow	4.16	Brown	4.59	Purple	3.90
Green	4.58	Orange	4.13	Orange	4.36	Brown	3.80
Brown	4.11	Purple	3.87	Red	4.32	Orange	3.27
Orange	3.89	Brown	3.48	Gold	4.31	Yellow	3.26

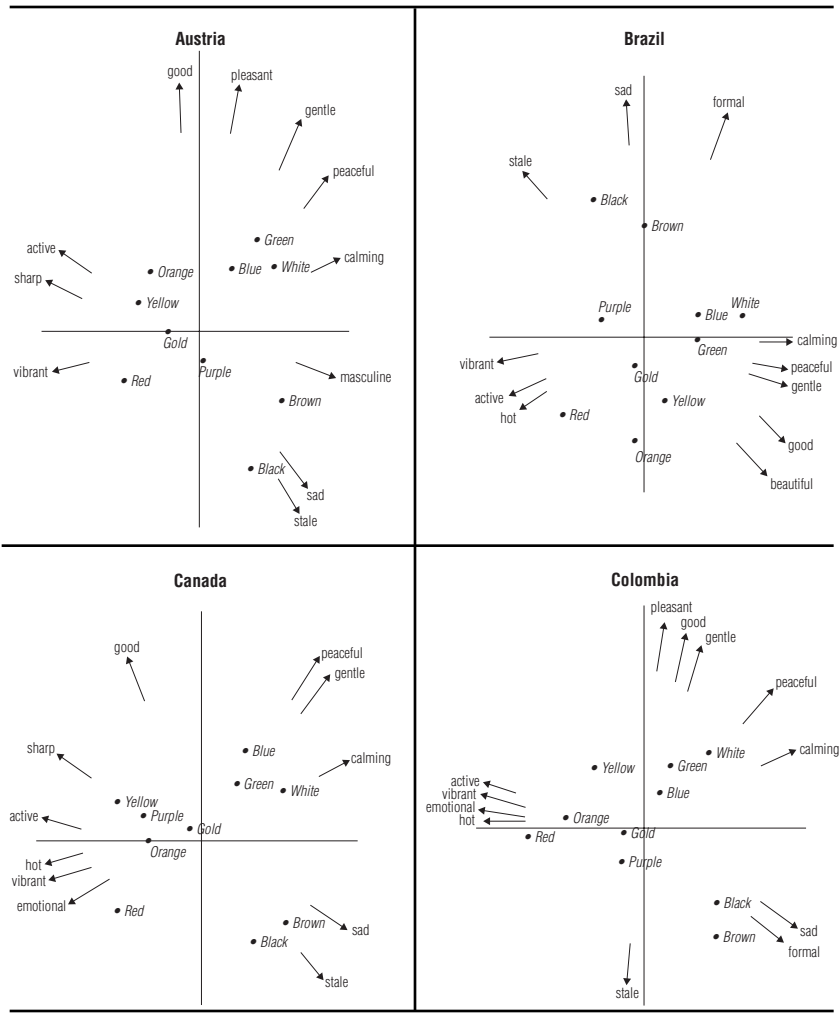
Table 2.
Means for Liking Ratings

Overall, blue was the most liked color with a mean of 6.0 on a seven-point scale. The ratings for blue across countries ranged from a low of 5.37 (Hong Kong) to a high of 6.59 (Austria). Blue was rated as the most liked color in five of the eight countries and as the second most liked color in the other three countries. This finding replicates the “blue phenomenon” found in previous research (see Simon 1971). Respondents in Hong Kong and Brazil rated white as their most liked color. Respondents from Canada rated black as their most liked color, and blue was a close second.¹

The Meaning of Color

To determine the meanings consumers associate with the ten colors, respondents rated each color on 20 semantic differential scales (refer to Table 1). For each country, a perceptual map was created. Colors were positioned in a two-dimensional space on the basis of the similarity (dissimilarity) of response to the semantic items. Each map therefore shows which colors cluster together and what meaning(s) are associated with the color clusters.² Figure 1 shows the eight country perceptual maps that contain the relationships between the ten colors and the 17 association ratings.³ Although each of the maps provides unique insights into color perceptions

Figure 1.
Principal Coordinate
Analysis for Color
Associations by Country



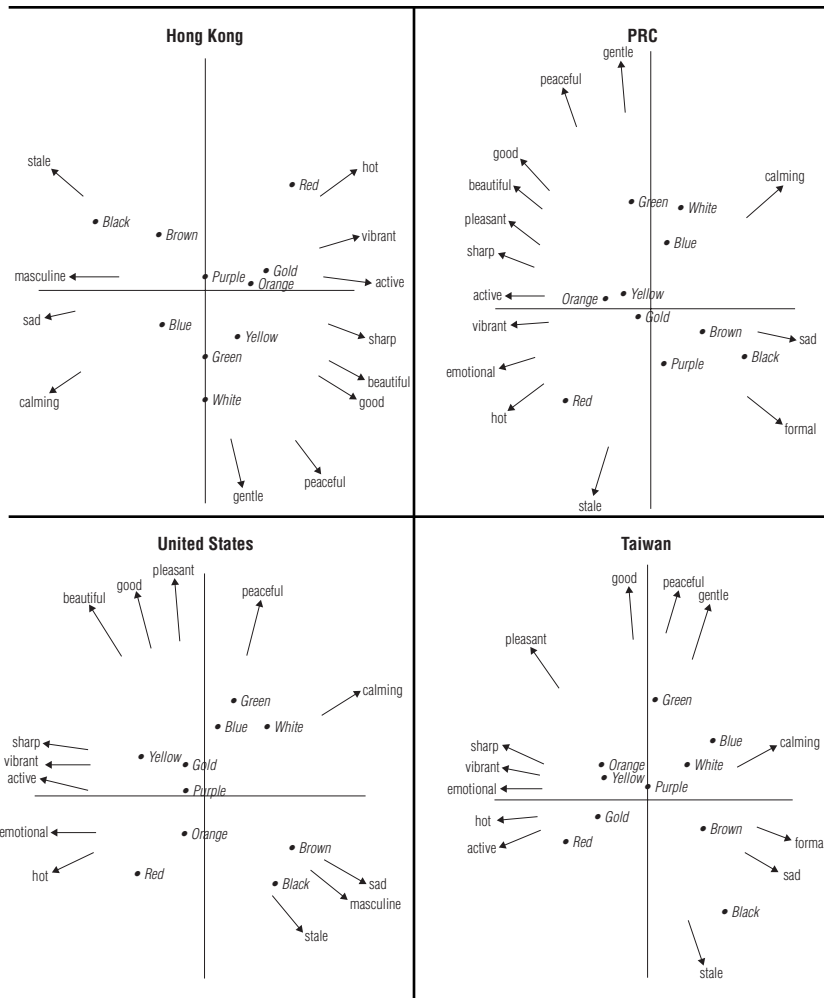


Figure 1, cont.

in each country, of interest here are the patterns of similar and dissimilar associations within and across countries.

A consistent pattern of color clusters emerged for each country. The most striking patterns are the clustering of blue, green, and white and of black and brown. Both of these clusters are evident in all eight countries and imply that, within each country, consumers associate each color in the cluster with similar meanings; however, the meanings may vary by culture. Gold, orange, and yellow also tend to cluster close to one another and usually near the origin of the maps. Purple is close to gold, orange, and yellow in some countries and close to black and brown in others. Red is the one color that tended not to cluster with any of the other colors. The meanings associated with each of these color clusters as depicted in Figure 1 are discussed next.

Blue, Green, and White. Blue, green, and white cluster together in all eight countries (see Figure 1), which indicates that they share similar meaning associations. In all countries, blue, green, and white are strongly associated with “peaceful,” “gentle,” and “calming.” In some countries, consumers also associated “beautiful” (Brazil, Hong Kong, PRC, United States)

and “pleasant” (Austria, Colombia, United States, and to a lesser extent PRC and Taiwan) with blue, green, and white. Although these three colors share meaning cross-culturally, they also convey unique meanings in different countries.

Black and Brown. The colors black and brown tend to cluster together on the perceptual maps and appear separate from the other colors, typically off to one end of the map and often in a totally separate quadrant from the other colors. Black and brown tend to have strongly held associations of “sad” and “stale” across cultures. Additional meaning associations of “formal” (Brazil, Colombia, PRC, and Taiwan) and “masculine” (Austria, Hong Kong, the United States) were evident in some countries, indicating again both universal and unique meanings for black and brown across cultures.

Gold, Orange, and Yellow. In general, there appears to be less consistency among the proximity of these colors to one another compared with the previous two clusters. One explanation for the loose fit of these three colors is that they are not perceived to be as similar as some of the other colors in terms of meaning associations. Another potential explanation is that they do not possess strong associations with any of the color meanings and therefore locate close to the origin and close to one another.

Purple. For the three Asian countries (Hong Kong, PRC, Taiwan), purple tends to cluster close to brown. In each of these countries, purple is as similar to brown as brown is to black.

Red. The color red tended to stand alone—that is, it did not cluster with other colors. Thus, across all countries, red is perceived as unique in terms of its meaning. Yet red was consistently associated with “active,” “hot,” and “vibrant” across all countries. Red was also strongly associated with “emotional” and “sharp” in most countries. Red conveyed additional meaning (“pleasant”) in two of the Asian countries (PRC and Taiwan).

A Spectrum of Color Meaning. An interesting pattern of colors forming a spectrum of meaning is evident across all countries. Close examination of the eight perceptual maps (see Figure 1) shows that a straight line can be drawn with red on one end and the blue–green–white cluster on the other end. The meaning associations along this spectrum run from “active,” “hot,” and “vibrant” (associated with red) to “calming,” “gentle,” and “peaceful” (associated with the blue–green–white cluster). The remaining six colors tend to locate approximately equidistant between these endpoints. Figure 2 shows this cross-cultural spectrum of color meaning.

Logo Color Preferences

Thus far, we have assessed which colors are most liked by members of different cultures and the meanings that are associated with various colors. We now turn to the selection of

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Figure 2.
Spectrum of Color Meaning

colors for product logos, which investigates preference for color combinations. When asked to match colors for a logo, do consumers pick colors with consistent or complementary meanings? That is, using the concepts outlined by Park, Jun, and Shocker (1996), are colors selected that are consistent (both are associated with similar meanings, such as “calm” and “peaceful”) or complementary (each color is strongly associated with a different meaning, such as one color with “calm” and the other with “active”)? Answers to these questions have implications as to how international managers can strategically select and mix colors to create desired associations about their brands.

In Table 3, we report the color(s) selected by respondents from each country to accompany green, red, or blue for a logo. Only colors selected by more than 20% of the respondents within each country are shown. The only color showing any cross-cultural consistency when paired with green is yellow (as occurred in Canada, Hong Kong, PRC, and Taiwan). Respondents from Colombia chose blue to be paired with green, whereas subjects from Austria chose white. The only consumers mentioning red to be paired with green were the Chinese and Taiwanese. Respondents from Hong Kong chose yellow and white. Respondents from Brazil and the United States did not consistently (greater than 20%) pick any color to be paired with green. According to Figure 1, blue and white are perceived to be more similar in meaning to green than yellow or red. Therefore, in general, respondents tend to pair green with a color dissimilar in meaning.

Colors selected to be paired with red varied considerably. Respondents from Brazil and the United States paired black with red. White was selected by respondents from Colombia, Hong Kong, PRC, and Taiwan. Yellow was selected to be paired with red by respondents from Austria, Canada, and PRC. In contrast, there was a lot of similarity in the selection of a color to be paired with blue across cultures. When blue was the designated logo color, subjects chose primarily white and in some cases yellow.

To determine whether consumers were matching colors using a consistency or complementary strategy, if at all, we as-

Table 3.
Color Selected to
Pair with Logo Color

	Logo Color		
	<i>Green</i>	<i>Red</i>	<i>Blue</i>
Austria	White 24%	Blue 31% Yellow 21%	Yellow 21% White 21%
Brazil	—	Black 23%	White 23%
Canada	Yellow 21%	Yellow 24%	White 24%
Colombia	Blue 25%	Blue 27% White 23%	—
Hong Kong	White 37% Yellow 26%	White 26%	White 58% Yellow 23%
PRC	Red 32% Yellow 29%	Yellow 26% Blue 23% White 23%	White 23% Yellow 23%
Taiwan	Yellow 36% Red 27%	Red 27% White 23%	White 59%
United States	—	Black 22%	White 22%

sessed the proximity of colors selected using the maps shown in Figure 1. For example, consider Brazil. Respondents matched black with red and white with blue. To the Brazilian respondents, blue and white are similar, whereas red and black are dissimilar. Table 4 contains the evaluation in terms of similarity of the colors matched based on their proximity in Figure 1. In general, respondents appear to use a consistency strategy for blue and a complementary strategy for red. When green was the focal color, the strategy varied, as some respondents exhibited a consistency strategy (Austria, Colombia, and Hong Kong) whereas others exhibited a complementary strategy (Canada, PRC, and Taiwan). Although respondents from different cultures may have exhibited a similar strategy (consistency or complementary), their choice of color may vary. For example, Austria and Colombia both exhibited a consistency strategy for the pairing of green. However, respondents from Austria selected white, whereas respondents from Colombia selected blue.

DISCUSSION

Our goal was to begin exploring how color and color combinations can be understood and applied to brand image strategies. We explored the extent to which consumers in different countries like various colors, the meanings they associate with colors, and how they would match colors for a logo.

We found that the colors blue, green, and white are all well liked across countries and share similar meanings. In con-

	Green	Red	Blue
Austria	Similar	Similar Dissimilar	Similar Dissimilar
Brazil	NA	Dissimilar	Similar
Canada	Dissimilar	Similar	Similar
Colombia	Similar	Dissimilar	NA
Hong Kong	Similar	Dissimilar	Similar
PRC	Dissimilar	Dissimilar	Similar
Taiwan	Dissimilar	Similar	Similar
United States	NA	Dissimilar	Similar

Notes: NA = not applicable.

Table 4.
Similarity in Meaning
Between Color Pairings

trast, black and red also received high liking ratings, yet in many cases their meanings are considerably different. Adams and Osgood (1973) report that East Asian groups tend to make the greatest distinctions among colors in terms of their affective meaning, whereas Latin American and U.S. groups make only average amounts of color distinctions. Our results indicate that in many parts of the world, consumers exhibit similarities in color liking and color meaning associations. Many intrinsic properties of colors (liking, meaning associations) thus appear to be pancultural. How colors are combined for logos, however, indicates that cultural similarities and differences exist in the ways consumers select color combinations.

Because colors have specific meanings associated with them, colors are important image cues. Colors are also strongly associated with different brands. Red is associated with Coke, blue with IBM, and green and white with Canada Dry ginger ale (Kanner 1989). Differences in preferences for colors and in color meanings across different nationalities might explain image perceptions of different brands and/or companies. It might be expected that the association of green and white with Canada Dry is more positive in Western nations, whereas the blue association with IBM would be positive in any culture, given the “blue phenomenon.”

The meanings of colors may also have implications for the associations that consumers make about a brand’s position in the marketplace. Consider IBM competing as a high-technology company in markets throughout the world. IBM may want to be perceived as “gentle” and “peaceful,” as consumers may prefer a hardware and software vendor that is easy to work with, service-oriented, easy to interpret, and so

forth. Yet IBM might also want to be associated with high-technology innovation attributions such as “active,” “hot,” and “sharp.” If so, its blue-and-white logo might be supplemented with gold, orange, or red in its advertising, displays, or other communication materials.

Underlying these color selection decisions is the notion that different combinations of colors may be capable of evoking different consumer reactions. In this study, we found that respondents from different countries have different tendencies with regard to matching colors in a logo design. More specifically, some groups tend to match or select only colors they like equally (respondents from Taiwan and Hong Kong in particular). Alternatively, other groups of respondents seemed to match colors that share the same meanings, and others paired colors whose associations were complementary.

Management Implications

The results of this study indicate that simply taking the color(s) of a particular logo, package, or product design from one market to other markets should not be done without a thorough understanding of how colors and color combinations are perceived in each location. Global marketing managers must recognize how their company and product colors are perceived across national markets. What meanings do they convey? Managers must acknowledge that the meanings associated with some colors may be pancultural, regional, or unique to a given culture. As colors are combined in logos, packaging, and other marks, the search for similarities and differences in color preferences and meanings becomes more complex.

Global managers need to recognize that the different meanings associated with specific colors may facilitate multisegment marketing opportunities. For example, Apple Computer's iMac products bear multiple colors that convey different meanings (e.g., the current stable of iMac personal computers includes five colors that span the spectrum of color meaning shown in Figure 2). Personal computer buyers with different psychographic profiles may find certain iMac colors more attractive than the conventional beige desktop and tower units of most other manufacturers. Because the spectrum of meaning held across most of the countries we studied, Apple's product color strategy may be viable globally so long as there is psychographic heterogeneity within the firm's target market in most countries. McCracken (1988) argues that the products and brands people purchase may well be chosen as an enhancement of their self-image. The results from the color pairing exercise indicate that in some cases colors were selected to be consistent, whereas in others the colors were selected to be complementary. It is possible that the color of the brand consumers purchase may be consistent or complementary with their desired self-images. For these reasons, global marketing managers should incorporate issues of color effects on brand

perceptions and choice into new product development and brand management processes. Global marketing research activities may be used to assess how color affects brand associations. For example, do the colors associated with the brands evoke similar usage and user associations across cultures?

Future studies that focus on the relationship between colors and brands would be useful. One set of issues is whether a brand cue alters color meaning associations. For example, in the same product category, both Sprite and 7UP soft drinks are marketed in similar shades of green bottles and cans. Is green associated with the same meanings when a consumer thinks of green in a brand context? Do both brands share the same green color associations? Also, to what extent do color associations extend across brands in different categories? Are the same meanings associated with Coca-Cola's red packaging as with Xerox's red logo? Another important issue is the interaction of color with other perceptions in the formulation of brand attitudes. For example, suppose that two brands both use red coloring in their packaging and logos, yet one of the two is not perceived as active, hot, or vibrant (the meanings typically associated with red). To what extent do other brand perceptions mitigate or enhance the impact of red on these brand image perceptions?

These issues are further complicated in international settings, in which firms must wrestle with potential cross-cultural meaning differences as well as different competitive landscapes and business infrastructures. Our results suggest that color can be an important, controllable marketing variable for managing image standardization. Certain colors manifest pancultural meaning associations. Strategic use of these colors affords opportunities for products, packages, logos, and the like to convey specific image associations across national markets. Other colors do not offer such consistent meanings cross-culturally. Further research that empirically links color and brand image associations in cross-national studies will help further develop insight into image standardization and customization opportunities.

Color provides one mechanism for creating logos that are recognizable and evoke positive brand and/or corporate images. Recent research on logo perceptions by Henderson and Cote (1998) suggests that logos perceived to be natural, elaborate, and harmonious can be advantageous to the firm's logo-related objectives (recognition, investment, and image). Research is needed that (cross-culturally) empirically relates colors, their meaning associations, and these perceptual constructs. An interesting approach may be to investigate logo and packaging color matching among managers with color-selection responsibilities, such as creative directors in advertising agencies and/or package and product designers.

IMPLICATIONS AND FURTHER RESEARCH

Our logo color-matching results indicated that some consumers invoked a consistency heuristic, whereas others appeared to focus on colors that were complementary. More research is needed to explore situations under which brand images are enhanced by logos and packages with (1) a single color, (2) multiple colors with shared meanings, and (3) multiple colors with distinct meanings. For example, a recent study on composite branding alliances (Park, Jun, and Shocker 1996) suggests that attribute profiles are more favorable when two brands are perceived as complementary than when the brands are individually viewed favorably but are not complementary. For color, then, two well-liked colors may be less effective in enhancing a brand's image than two colors that are less well-liked but are more complementary. Further research is needed that examines the effectiveness of color meaning consistency and complementarity on brand evaluations.

APPENDIX

The perceptual maps were created by the ASCID Program (see Dillon, Domzal, and Madden 1986), which uses the principal coordinates analysis method. Basically, the procedure works as follows:

1. Define the matrix D^* , whose elements are $-1/2 d_{ij}$, where d_{ij} is the direct or derived distance between objects O_i and O_j and $i, j = 1, 2, \dots, n$. In this case, the objects are the colors, and the distances represent the perceived similarity between two colors for the 17 meaning association items.
2. Define the matrix Q , whose elements are given by $q_{ij} = d^*_{ij} = d^*_i - d_j + d^*$.
3. Decompose the matrix Q ; denote the r nonzero latent roots by V and the corresponding vectors by X , where $X'X = V$.

The roots and vectors from the principal components analysis provide important information. The roots show the amount of variance accounted for by each dimension. The vectors are used to calculate a group centroid for each color on each dimension. The centroids are used to locate the colors in a two-dimensional space. The smaller the distance between any pair of colors, the greater is the proximity in the space. When the colors are located in the two-dimensional space, the preference ratings are fit as vectors in the space to aid in the interpretation of the location of the colors. Therefore, given a satisfactory reduced-dimensional space, each of the ten colors is located in the space on the basis of its centroids, and the meaning association ratings for the colors are fit to the space as vectors. To fit the vectors, the mean association ratings are regressed on the coordinates of the colors in the reduced-dimensional space. The coefficient of determination (R^2) measures the association between the association ratings and the locations of the col-

ors in the reduced-dimensional space. Larger values of R^2 indicate that the meaning item is useful in describing the proximity of the colors in the space. Given a satisfactory level of R^2 , the vectors are inserted in the space using the beta coefficients for each axis as directional cosines.

1. In many cases, groups of colors have similar ratings. For example, in Canada, black is most preferred, with a mean of 5.51; however, the mean for blue is 5.48. In Taiwan, blue has an average of 6.27, whereas the average for white is 6.23. Within each country, the preference for color varied. The range in average scores, within countries, varies from a low of 1.95 for Hong Kong to a high of 3.42 for Austria.
2. Details on the mapping procedure are explained in the Appendix.
3. Although 20 color associations (scaled ratings) were measured, 3 were dropped from the principal coordinates analysis. The three scales were dropped because of translation and interpretation problems that arose in the data collection process. As such, each of the principal coordinates analyses began with 17 color association ratings measured across ten colors. For each of the country maps, various color associations were dropped from subsequent analyses if they had factor loadings less than .70, which indicated that the colors were not differentiated on the specific associations. This does not mean that the colors are or are not associated with these meanings, only that the perceptions, whatever they are, are not different across colors.

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NOTES

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